

=> FILE REG

FILE 'REGISTRY' ENTERED AT 14:29:25 ON 12 DEC 2006
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=> D HIS

FILE 'HCAPLUS' ENTERED AT 12:03:32 ON 12 DEC 2006

L1 561 S UTSUGI ?/AU
L2 60182 S MORI ?/AU
L3 27 S L1 AND L2
L4 71 S UTSUGI K?/AU
L5 7227 S MORI M?/AU
L6 10 S L4 AND L5
SEL L6 1 RN

FILE 'REGISTRY' ENTERED AT 12:05:27 ON 12 DEC 2006

L7 15 S E1-E15
SEL L7 1-4 RN
L8 4 S E17-E20

FILE 'HCA' ENTERED AT 12:09:10 ON 12 DEC 2006

L9 8 S L8
L10 471551 S ELECTROLY?
L11 229682 S BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR
L12 4 S L9 AND (L10 OR L11)

FILE 'REGISTRY' ENTERED AT 12:14:49 ON 12 DEC 2006

SEL L7 5 RN
L13 1 S E21

FILE 'HCA' ENTERED AT 12:16:12 ON 12 DEC 2006

L14 590 S L13
L15 210391 S (TRANSITION? OR LANTHANID? OR LANTHANOID? OR LANTHANON?
L16 98342 S RARE#(2A)EARTH?(2A)(METAL#### OR ION OR IONS OR CATION
L17 43 S L14 AND (L15 OR L16)
L18 42 S L17 AND (L10 OR L11)

FILE 'REGISTRY' ENTERED AT 12:18:50 ON 12 DEC 2006

SEL L7 12 RN
L19 1 S E22

FILE 'HCA' ENTERED AT 12:20:33 ON 12 DEC 2006

L20 14890 S APROTIC? OR NONPROTIC? OR NON(W)PROTIC?
L21 1274 S L19 OR VINYLENE#(A)CARBONATE# OR VINYLENECARBONATE#

L22 3 S L12 AND L20
L23 1 S L18 AND L20
L24 7 S L13/D OR L13/DP
L25 0 S L24 AND (L15 OR L16)
L26 7 S L18 AND L21
L27 9258 S (LANTHANID? OR LANTHANOID? OR LANTHANON?) (2A) (METAL####)
L28 1 S (L27 OR L16) AND L18
L29 1 S (L27 OR L16) AND L9

FILE 'LCA' ENTERED AT 12:29:51 ON 12 DEC 2006

L30 958 S ?CARBONATE?
E ESTERS/CV
L31 112 S E3
L32 265 S ?LACTONE?
L33 59 S (CYCLIC? OR CYCLIZ? OR CYCLIS? OR CROWN?) (2A) ETHER#
L34 14 S (LINEAR? OR STRAIGHTCHAIN? OR STRAIGHT? (2A) CHAIN? OR AL
E ETHERS/CV
L35 84 S E3

FILE 'HCA' ENTERED AT 12:32:51 ON 12 DEC 2006

L36 32 S L18 AND (L30-L35)
L37 14 S L18 AND (L31-L35)

FILE 'REGISTRY' ENTERED AT 12:34:38 ON 12 DEC 2006

E 1,3-PROPANESULTONE/CN
E 1,3-PROPANE SULTONE/CN
L38 1 S E3
E 1,4-BUTANE SULTONE/CN
L39 1 S E3
E SULFORANE/CN
E SULFORANE
E METHANE SULFONIC ACID ANHYDRIDE/CN
E SULFONIC ACID ANHYDRIDE/CN

FILE 'HCA' ENTERED AT 12:40:19 ON 12 DEC 2006

L40 426 S SULFONIC# (3A) ACID# (3A) ANHYDRIDE#
SEL L40 204 RN

FILE 'REGISTRY' ENTERED AT 12:42:03 ON 12 DEC 2006

L41 3 S E1-E3

FILE 'HCA' ENTERED AT 12:42:18 ON 12 DEC 2006

SEL L40 203 RN

FILE 'REGISTRY' ENTERED AT 12:42:37 ON 12 DEC 2006

L42 35 S E4-E38

FILE 'LREGISTRY' ENTERED AT 12:43:24 ON 12 DEC 2006

L43 STR
L44 0 S L43
L45 0 S L43 FUL

FILE 'REGISTRY' ENTERED AT 12:44:30 ON 12 DEC 2006
L46 0 S L43

FILE 'LREGISTRY' ENTERED AT 12:44:56 ON 12 DEC 2006
L47 STR
L48 0 S L47
L49 3 S L47 FUL

FILE 'REGISTRY' ENTERED AT 12:46:14 ON 12 DEC 2006
L50 1440 S ?SULFONIC/CNS AND ANHYDRIDE#
L51 555 S SULTONE#
E SULFOLENE/CN
L52 2 S E3
L53 76 S SULFOLENE#
L54 2071 S L38 OR L39 OR L50 OR L51 OR L52 OR L53

FILE 'HCA' ENTERED AT 12:48:59 ON 12 DEC 2006
L55 16013 S L54
L56 2 S L18 AND L55
L57 2 S L26 AND L55
L58 1 S L37 AND L55

FILE 'LREGISTRY' ENTERED AT 12:51:28 ON 12 DEC 2006
L59 STR

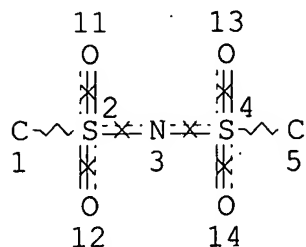
FILE 'REGISTRY' ENTERED AT 12:54:31 ON 12 DEC 2006
L60 50 S L59
L61 8813 S L59 FUL
SAV L61 WEI013/A
L62 289 S L61 AND (T1 OR T2 OR T3 OR B2)/PG
L63 94 S L61 AND LNTH/PG
L64 8445 S L61 NOT (L62 OR L63)

FILE 'HCA' ENTERED AT 14:10:15 ON 12 DEC 2006
L65 94 S L63
L66 247 S L62
L67 7212 S L64
L68 5 S L65 AND L55
L69 5 S L68 AND (L10 OR L11)
L70 5 S L68 AND (52 OR 72)/SC,SX
L71 3 S L66 AND L55
L72 1 S L71 AND (L10 OR L11 OR 52/SC,SX OR 72/SC,SX)
L73 226 S L67 AND L55
L74 5 S L73 AND (L15 OR L16)

L75 3 S L74 AND (L10 OR L11 OR 52/SC,SX OR 72/SC,SX)
L76 6 S L12 OR L22 OR L23 OR L56 OR L57 OR L58 OR L69 OR L70 OR

FILE 'REGISTRY' ENTERED AT 14:29:25 ON 12 DEC 2006

=> D L61 QUE STAT
L59 STR



NODE ATTRIBUTES:

NSPEC IS RC AT 1
NSPEC IS RC AT 5
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

L61 8813 SEA FILE=REGISTRY SSS FUL L59

100.0% PROCESSED 12269 ITERATIONS
SEARCH TIME: 00.00.01

8813 ANSWERS

=> FILE HCA

FILE 'HCA' ENTERED AT 14:30:02 ON 12 DEC 2006

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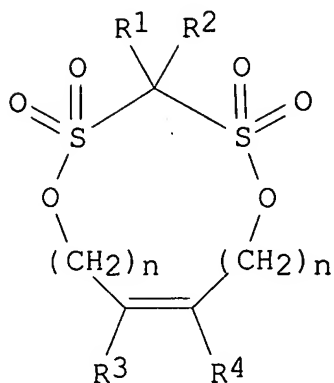
=> D L76 1-6 CBIB ABS HITSTR HITIND

L76 ANSWER 1 OF 6 HCA COPYRIGHT 2006 ACS on STN

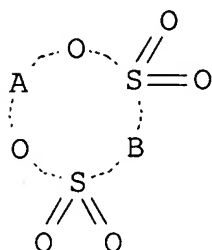
141:334876 **Electrolyte** solution for secondary **battery**
and the **battery**. Kusachi, Yuki; Utsuki, Koji (NEC Corp.,

Japan). Jpn. Kokai Tokkyo Koho JP (2004281325 A2 20041007, 27 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-74054 20030318.

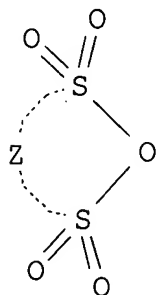
GI



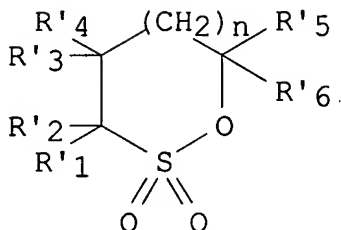
I



II



III



IV

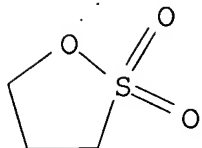
AB The **electrolyte** soln. contains an **aprotic** solvent and an unsatd. cyclic disulfonate ester I, where R1-R4 = H, Me, Et, or halogen and n = integer 0-2. The **electrolyte** soln. may also contain II [A = (substituted) C1-5 (fluoro)alkylene, carbonyl, sulfinyl, or bivalent C2-6 group contg. ether bond connected (fluoro)alkylene units; B = (substituted) alkylene group], III [Z = (substituted) C2-4 alkylene, alkenylene, arom. or heterocyclic group], or IV (n = integer 0-2, R'1-R'6 = H C1-12 alkyl, C3-6 cycloalkyl, or C6-12 aryl group). The **battery** is a secondary Li **battery**.

IT 1120-71-4, 1,3-Propanesultone 259194-36-0
259194-40-6 634598-36-0 634598-37-1

(**electrolyte** solns. contg. cyclic disulfonate esters
and other additives for secondary lithium **batteries**)

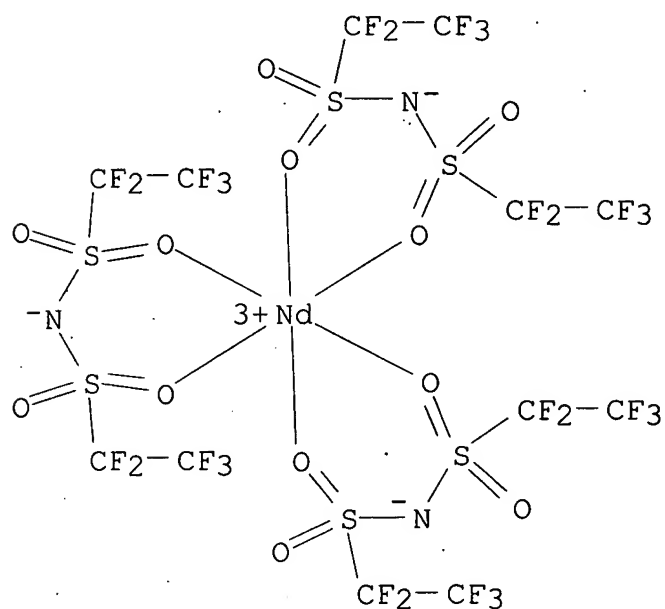
RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



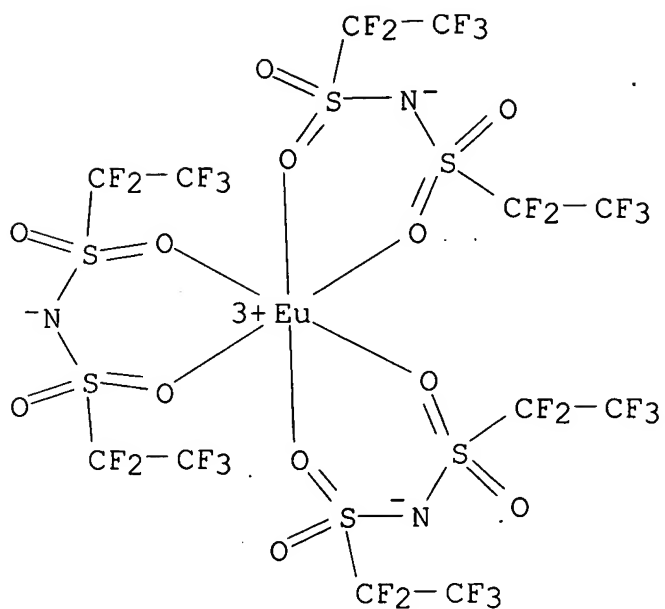
RN 259194-36-0 HCA

CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



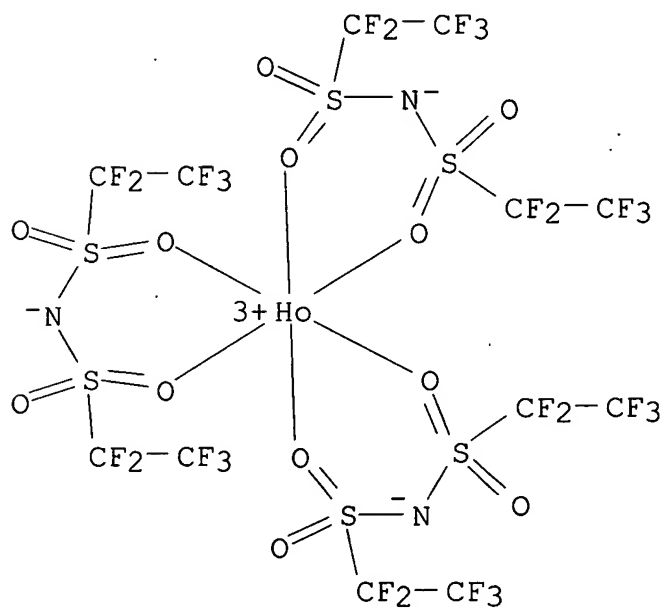
RN 259194-40-6 HCA

CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA

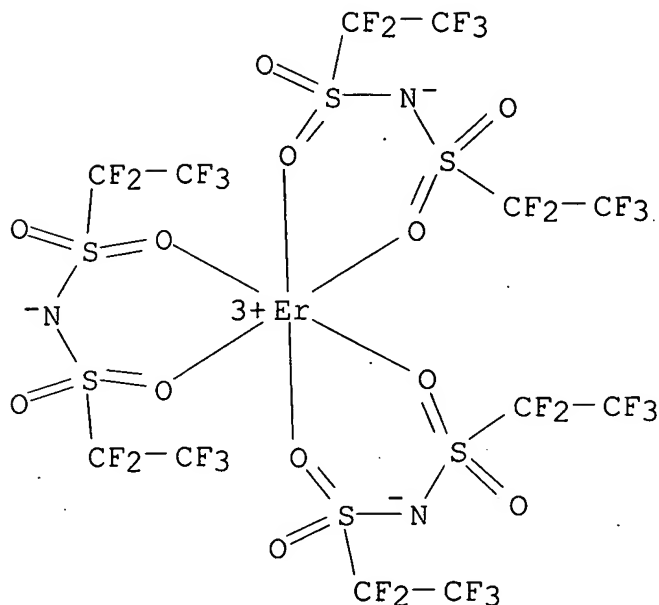
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-κO]ethanesulfonamidato-κO]-, (OC-6-11)-(9CI) (CA INDEX NAME)



RN 634598-37-1 HCA

CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-

κO]ethanesulfonamidato-κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M004-58
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST secondary lithium **battery electrolyte** soln
cyclic disulfonate ester
- IT **Battery electrolytes**
(**electrolyte** solns. contg. cyclic disulfonate esters and other additives for secondary lithium **batteries**)
- IT 769973-24-2 769973-25-3 769973-26-4 769973-27-5
(cyclic disulfonate ester contg. secondary lithium **battery electrolyte** solns.)
- IT 872-36-6, Vinylene carbonate **1120-71-4**, 1,3-Propanesultone
14913-52-1, Neodymium ion (Nd³⁺), uses 18472-30-5, Erbium ion (Er³⁺), uses 22541-18-0, Europium ion (Eu³⁺), uses 22541-22-6, Holmium ion (Ho³⁺), uses **259194-36-0 259194-40-6 634598-36-0 634598-37-1**
(**electrolyte** solns. contg. cyclic disulfonate esters and other additives for secondary lithium **batteries**)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate 132843-44-8
(**electrolyte** solns. contg. cyclic disulfonate esters for secondary lithium **batteries**)

140:184814 **Electrolyte** solution for secondary **battery**

. Utsugi, Koji; Kusachi, Yuki; Yamazaki, Ikiko (NEC Corporation, Japan). Eur. Pat. Appl. EP 1394888 A1 (20040303), 35 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP 2003-90268 20030822. PRIORITY: JP 2002-250441 20020829; JP 2003-52588 20030228; JP 2003-289432 20030807.

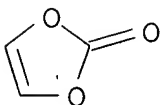
AB The present invention provides a technol. of inhibiting the decompn. of the solvent of the **electrolyte** soln. for a secondary **battery**. Further, the present invention provides a technol. of prohibiting the resistance increase of a secondary **battery** and improving the storage properties such as improving the capacity retention ratio. An **electrolyte** soln. comprising non-proton solvent and cyclic sulfonic ester including at least two sulfonyl groups may be used.

IT **872-36-6, Vinylene carbonate**
132843-44-8

(**electrolyte** soln. for secondary **battery**)

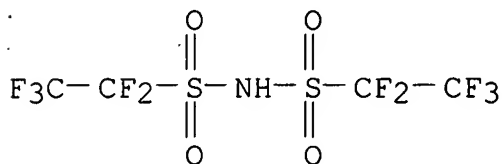
RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 132843-44-8 HCA

CN Ethanesulfonamide, 1,1,2,2,2-pentafluoro-N-
[(pentafluoroethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



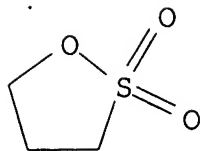
● Li

IT **1120-71-4, 1,3-Propanesultone 259194-36-0**
259194-40-6 634598-36-0 634598-37-1

(**electrolyte** soln. for secondary **battery**)

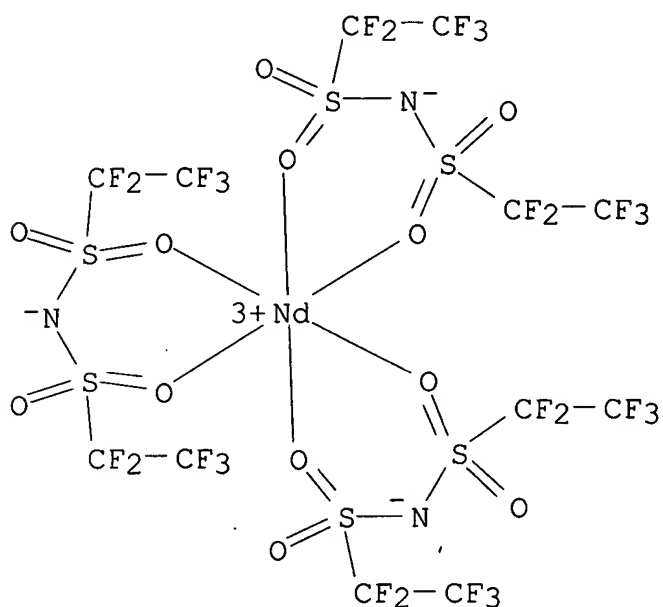
RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



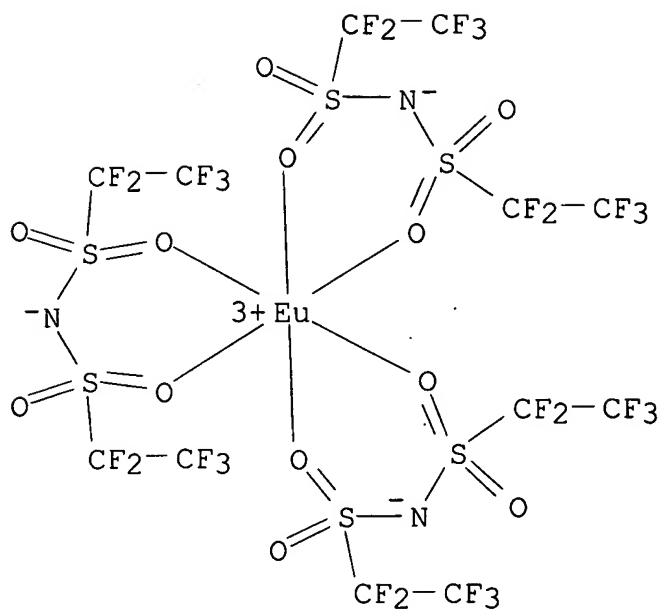
RN 259194-36-0 HCA

CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



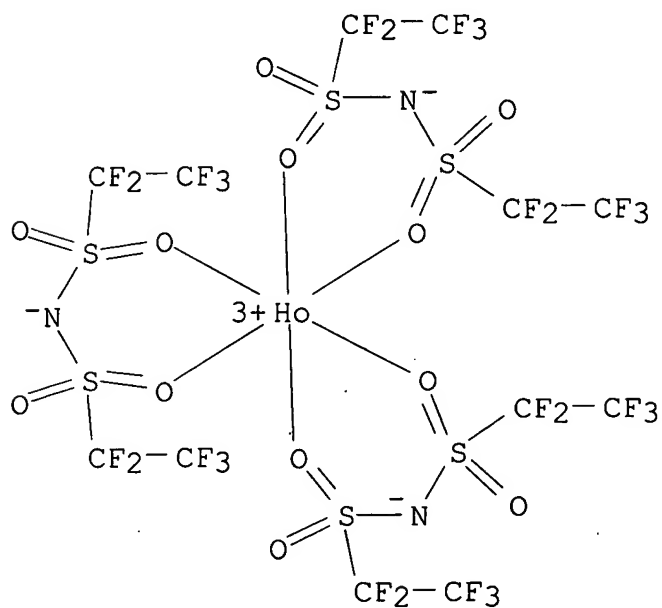
RN 259194-40-6 HCA

CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA

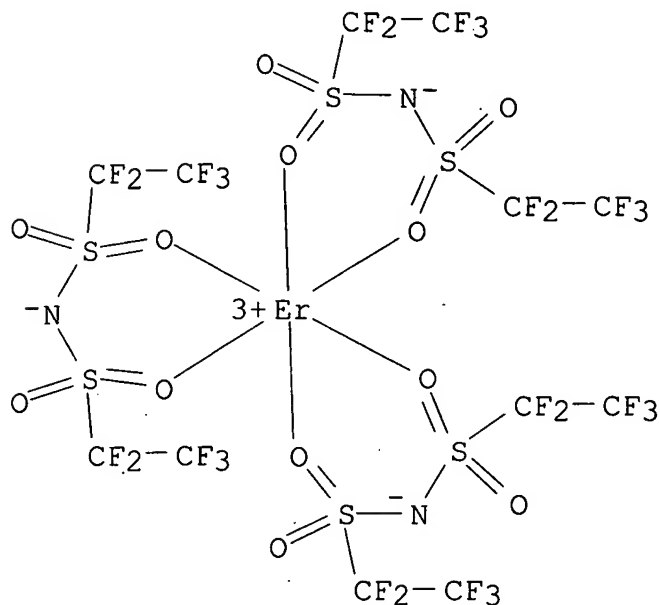
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-37-1 HCA

CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-

κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M006-16
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST **electrolyte** soln secondary **battery**
- IT **Ethers, uses**
(cyclic; **electrolyte** soln. for secondary battery)
- IT **Battery electrolytes**
(**electrolyte** soln. for secondary battery)
- IT **Ethers, uses**
Rare earth complexes
Transition metal complexes
(**electrolyte** soln. for secondary battery)
- IT Carboxylic acids, uses
(esters, aliph.; **electrolyte** soln. for secondary battery)
- IT Sulfonic acids, uses
(esters, cyclic; **electrolyte** soln. for secondary battery)
- IT Secondary **batteries**
(lithium; **electrolyte** soln. for secondary battery)
- IT **Lactones**
(γ -; **electrolyte** soln. for secondary

battery)

- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 463-79-6D, Carbonic acid, ester, cyclic 463-79-6D, Carbonic acid, ester, linear 497-62-1
872-36-6, Vinylene carbonate
 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-00-8D, Neodymium, complex 7440-44-0, Carbon, uses 7440-52-0D, Erbium, complex 7440-53-1D, Europium, complex 7440-60-0D, Holmium, complex 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12057-17-9, Lithium manganese oxide LiMn_2O_4 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 113066-89-0, Cobalt lithium nickel oxide $\text{Co}_0.2\text{LiNi}_0.8\text{O}_2$
132843-44-8

(electrolyte soln. for secondary battery)

- IT **1120-71-4**, 1,3-Propanesultone 14913-52-1, Neodymium(3+), uses 18472-30-5, Erbium(3+), uses 22541-18-0, Europium(3+), uses 22541-22-6, Holmium(3+), uses 37181-39-8, Triflate 99591-73-8 99591-74-9 99591-80-7 **259194-36-0 259194-40-6**
634598-36-0 634598-37-1 659737-87-8
 659737-88-9 659737-89-0 659737-90-3

(electrolyte soln. for secondary battery)

L76 ANSWER 3 OF 6 HCA COPYRIGHT 2006 ACS on STN

140:131080 **Electrolyte** solution for the secondary

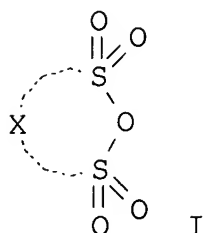
battery and the **battery** using the solution.

Utsuki, Koji; Mori, Mitsuhiro (NEC Corp., Japan). Jpn. Kokai Tokkyo

Koho JP 2004022336 A2 20040122, 24 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 2002-175648 20020617.

GI



- AB The **electrolyte** soln. has a sulfonic acid anhydride I [X = (substituted) C2-4 alkylene, (substituted) C2-4 alkenyl, or (substituted) arom. ring] in an **aprotic** solvent. The

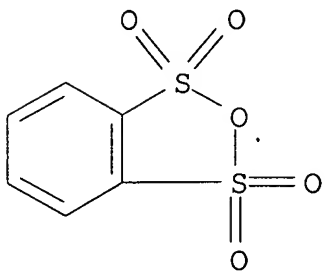
battery has a cathode, an anode, and the above
electrolyte soln.

IT 33356-82-0

(**electrolyte** solns. contg. sulfonic acid anhydrides for
secondary **batteries**)

RN 33356-82-0 HCA

CN 2,1,3-Benzoxadithiole, 1,1,3,3-tetraoxide (9CI) (CA INDEX NAME)



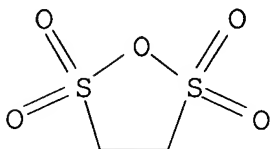
IT 4378-87-4 82727-20-6 259194-36-0

259194-40-6 634598-36-0 634598-37-1

(**electrolyte** solns. contg. sulfonic acid anhydrides for
secondary **batteries**)

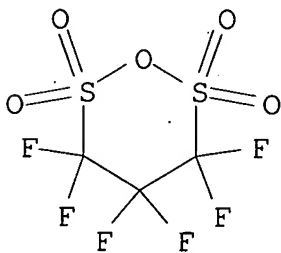
RN 4378-87-4 HCA

CN 1,2,5-Oxadithiolane, 2,2,5,5-tetraoxide (9CI) (CA INDEX NAME)



RN 82727-20-6 HCA

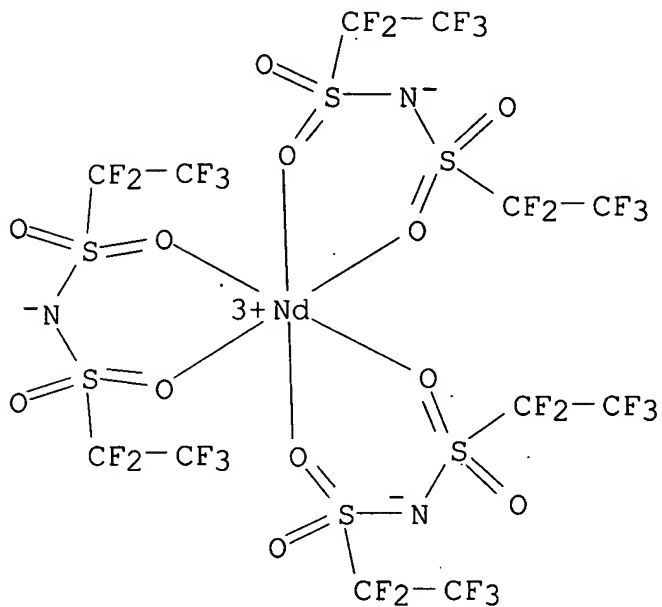
CN 1,2,6-Oxadithiane, 3,3,4,4,5,5-hexafluoro-, 2,2,6,6-tetraoxide (9CI)
(CA INDEX NAME)



RN 259194-36-0 HCA

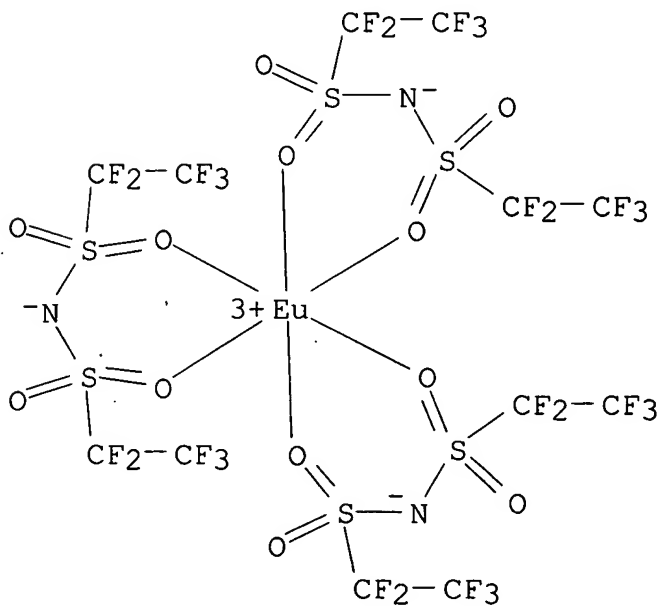
CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl]-

κO]ethanesulfonamidato-κO]-, (OC-6-11)- (9CI) (CA INDEX
NAME)

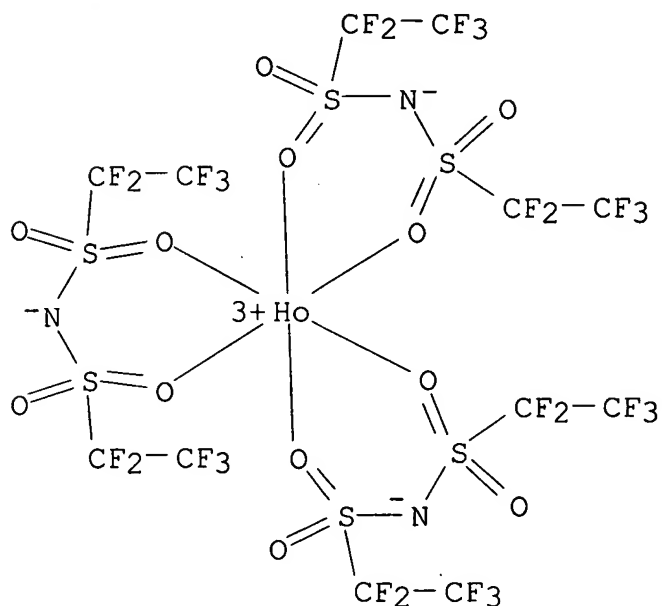


RN 259194-40-6 HCA

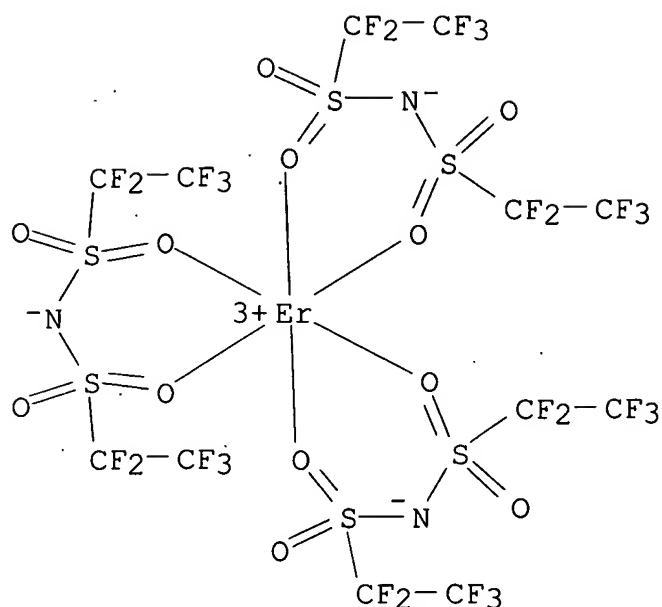
CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-
κO]ethanesulfonamidato-κO]-, (OC-6-11)- (9CI) (CA INDEX
NAME)



RN 634598-36-0 HCA
 CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-37-1 HCA
 CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M004-02; H01M004-58
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST secondary **battery electrolyte** sulfonic acid anhydride
- IT **Battery electrolytes**
Secondary **batteries**
(**electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 7440-44-0, Carbon, uses
(amorphous; anode; **electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses
(anode; **electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 12057-17-9, Lithium manganese oxide (LiMn2O4) 21324-40-3, Lithium hexafluorophosphate
33356-82-0 132843-44-8
(**electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 872-36-6, Vinylene carbonate **4378-87-4** 76076-58-9
82727-20-6 259194-36-0 259194-40-6
634598-36-0 634598-37-1 648922-25-2
648922-26-3 648922-27-4
(**electrolyte** solns. contg. sulfonic acid anhydrides for

secondary **batteries**)

L76 ANSWER 4 OF 6 HCA COPYRIGHT 2006 ACS on STN

140:29537 **Electrolyte** solution for secondary lithium

battery and the **battery** using the solution.

Utsugi, Koji; Mori, Mitsuhiro (NEC Corporation, Japan). PCT Int. Appl. WO 2003105268 A1 20031218, 31 pp. DESIGNATED STATES: W: CA, CN, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP7418 20030611. PRIORITY: JP 2002-170228 20020611.

AB The **electrolyte** soln. comprises at least imide anions, **transition metal ions** and a compd. having a sulfonyl group, in an **aprotic** solvent. The **battery** using the **electrolyte** soln. has long cycle life and high safety.

IT **872-36-6, Vinylene carbonate**

1120-71-4, 1,3-Propane sultone 132843-44-8

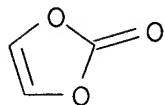
259194-36-0 259194-40-6 634598-36-0

634598-37-1

(**electrolyte** solns. contg. sulfonyl compds., **transition metal ions** and imide anions for secondary lithium **batteries**)

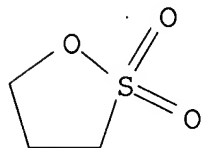
RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



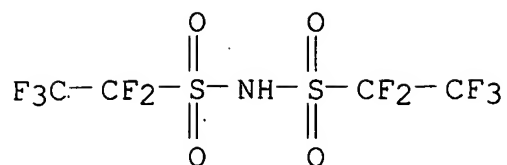
RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 132843-44-8 HCA

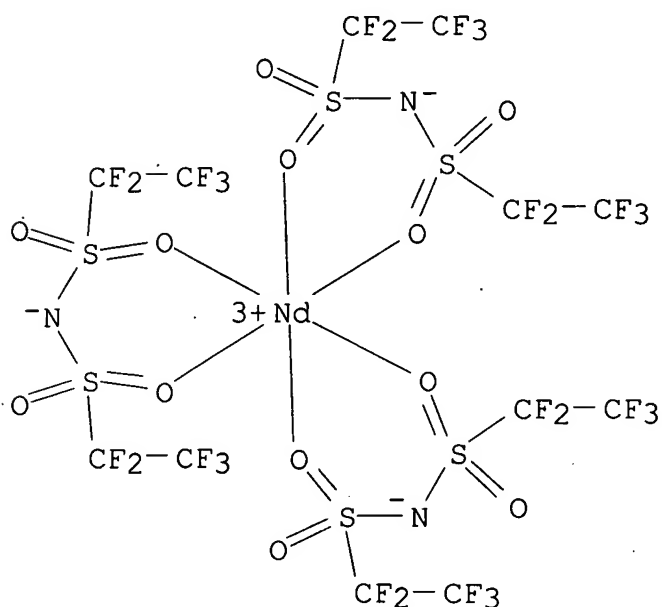
CN Ethanesulfonamide, 1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

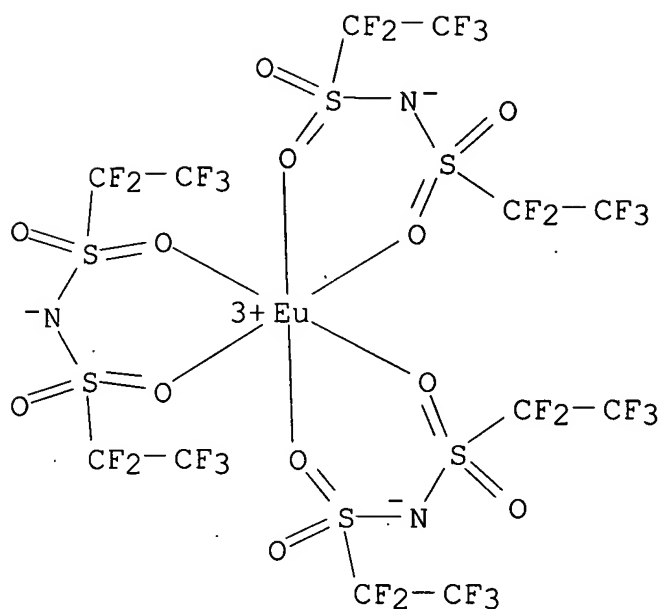
RN 259194-36-0 HCA

CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



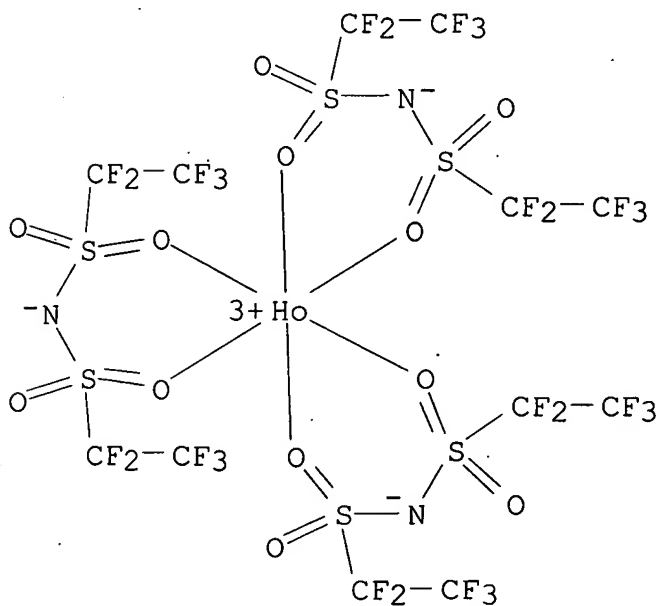
RN 259194-40-6 HCA

CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA

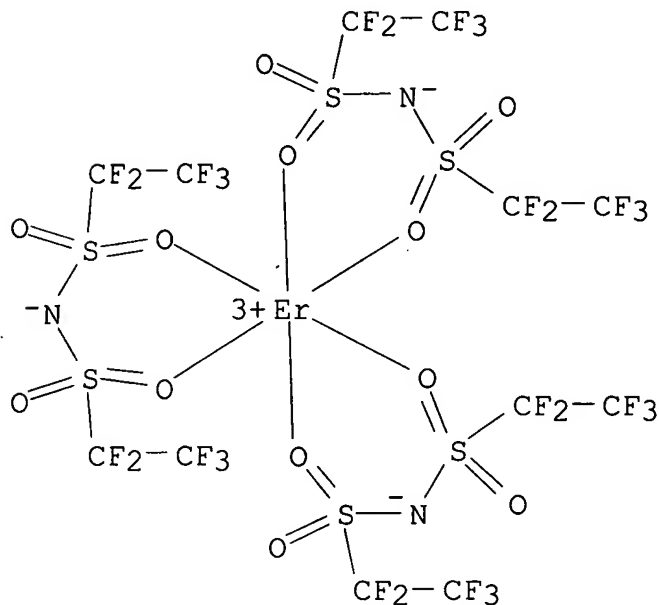
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-37-1 HCA

CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-

κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M004-02
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST secondary lithium **battery electrolyte**
aprotic solvent; **battery electrolyte**
imide **transition metal** sulfonyl compd
- IT **Battery electrolytes**
(**electrolyte** solns. contg. sulfonyl compds.,
transition metal ions and imide
anions for secondary lithium **batteries**)
- IT Secondary **batteries**
(lithium; **electrolyte** solns. contg. sulfonyl compds.,
transition metal ions and imide
anions for secondary lithium **batteries**)
- IT 7440-44-0, Carbon, uses
(amorphous; anode; **electrolyte** solns. contg. sulfonyl
compds., **transition metal ions** and
imide anions for secondary lithium **batteries**)
- IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 68848-64-6
(anode; **electrolyte** solns. contg. sulfonyl compds.,
transition metal ions and imide
anions for secondary lithium **batteries**)
- IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
(cathode; **electrolyte** solns. contg. sulfonyl compds.,

transition metal ions and imide
 anions for secondary lithium **batteries**)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate **872-36-6, Vinylene**
carbonate 1120-71-4, 1,3-Propane sultone
132843-44-8 259194-36-0 259194-40-6
634598-36-0 634598-37-1
 (electrolyte solns. contg. sulfonyl compds.,
transition metal ions and imide
 anions for secondary lithium **batteries**)

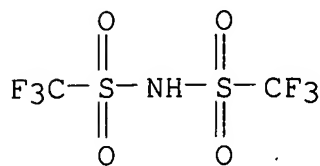
L76 ANSWER 5 OF 6 HCA COPYRIGHT 2006 ACS on STN

137:96277 Synthesis and uses of polyethyleneimine- and
 polypropyleneimine-based conducting polymer **electrolytes**,
 especially for **batteries** and fuel cells. Frech, Roger E.;
 Glatzhofer, Daniel T. (The University of Oklahoma, USA). PCT Int.
 Appl. WO 2002054515 A2 20020711, 89 pp. DESIGNATED STATES: W: AE,
 AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR,
 CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
 ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
 MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE,
 SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW;
 RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA,
 GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.
 (English). CODEN: PIXXD2. APPLICATION: WO 2001-US50140 20011231.
 PRIORITY: US 2000-258754P 20001229.

AB A covalently cross-linked polymer **electrolyte**, present as
 a continuous thin film (preferably 100-1000 μ thick) with
 preferred specific cond. of .gtorsim.10⁻³ S/cm at 20-100°,
 has amine groups in the polymer backbone and contains dispersed
 metal salts (e.g., salts with alkali metals, alk. earth
metals, and transition metals). The
 polymers are preferably selected from substituted or unsubstituted
 poly(ethyleneimine) and poly(propyleneimine), with repeating unit of
 general structure -[X-N[(R1)n/L]]-, in which R1 is a substituent (H,
 hydrocarbyl or heterohydrocarbyl) that is free of covalent bonds to
 the polymer backbone, L is a covalent crosslinking agent, n = 1-2,
 and X is hydrocarbylene or heterhydrocarbylene (preferably
 C1-5-alkylene). The polyethyleneimine or polypropyleneimine can be
 connected to a second polymer (by the crosslinking agent), such as
 polyethylene, polypropylene, poly(ethylene oxide), poly(propylene
 oxide), poly(ethylene sulfide), and poly(propylene sulfide). The
 polymer **electrolyte**, which can be swollen by or formulated
 with a plasticizing solvent, are suitable for use in
batteries, fuel cells, sensors, supercapacitors, and
 electrochromic devices. The unsubstituted polyethyleneimine and
 polypropyleneimine were prepd. by ring-opening polymn. of
 2-methyloxazoline and 5,6-dihydro-4H-1,3-oxazine, resp., followed by

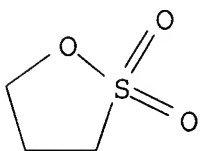
hydrolysis.

- IT **90076-65-6**, Lithium bis(trifluoromethylsulfonylimide)
(polymer **electrolyte** contg.; synthesis and uses of
polyethyleneimine- and polypropyleneimine-based conducting
polymer **electrolytes**, esp. for **batteries** and
fuel cells)
- RN 90076-65-6 HCA
- CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)



● Li

- IT **1120-71-4DP**, reaction products with polyamines
(synthesis and crosslinking of; synthesis and uses of
polyethyleneimine- and polypropyleneimine-based conducting
polymer **electrolytes**, esp. for **batteries** and
fuel cells)
- RN 1120-71-4 HCA
- CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



- IC ICM H01M006-18
ICS H01M010-40; H01M008-10; H01B001-12; C08G073-02; B01D071-60;
B01D069-12
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 38, **72**, 76
- ST polyethyleneimine polypropyleneimine conducting polymer
electrolyte; **battery** polymer **electrolyte**
crosslinked functionalized polyethyleneimine; fuel **cell**
polymer **electrolyte** crosslinked functionalized
polyethyleneimine; metal salt crosslinked polyethyleneimine polymer
electrolyte

- IT Superconductor devices
(capacitors, polymer **electrolytes** for; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Conducting polymers
(**electrolytes**; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Glycols, uses
(ethers, polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Ethers, uses
(glycol, polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Esters, uses
Nitriles, uses
(polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Electrochromic devices
Sensors
(polymer **electrolytes** for; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT **Battery electrolytes**
Fuel cell electrolytes
(polymeric; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Polymerization
(ring-opening; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Alkali metal salts
Alkaline earth salts
Transition metal salts
(salts with polyethyleneimines and polypropyleneimines, polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and

- fuel cells)
- IT Capacitors
(superconducting, polymer **electrolytes** for; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Polyamines
(synthesis and crosslinking of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Polymer **electrolytes**
(synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 108-32-7, Propylene carbonate 872-50-4, N-Methylpyrrolidone, uses 2926-30-9, Sodium triflate 7664-38-2, Phosphoric acid, uses 33454-82-9, Lithium triflate **90076-65-6**, Lithium bis(trifluoromethylsulfonylimide)
(polymer **electrolyte** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 67-68-5, DMSO, uses 7447-39-4, Copper chloride (CuCl₂), uses (polymer **electrolyte** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 441353-87-3P 441353-88-4P 441353-89-5P
(polymer **electrolyte**; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 441353-97-5P
(polymer **electrolyte**; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 64-19-7, Acetic acid, uses 68-12-2, Dimethylformamide, uses 79-10-7D, Acrylic acid, esters 84-74-2, Dibutyl phthalate 107-31-3, Methyl formate 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-15-2, 2-(2-Ethoxyethoxy)ethyl acetate 112-49-2, Triglyme 126-33-0, Sulfolane 127-19-5, Dimethylacetamide 143-24-8, Tetraglyme 463-79-6D, Carbonic acid, esters 556-65-0, Lithium thiocyanate 627-93-0, Dimethyl adipate 1493-13-6, Triflic acid 7439-93-2D, Lithium, salts with polyethyleneimines and polypropyleneimines 7440-02-0D, Nickel, salts with polyethyleneimines and polypropyleneimines 7440-09-7D, Potassium,

salts with polyethyleneimines and polypropyleneimines 7440-17-7D, Rubidium, salts with polyethyleneimines and polypropyleneimines 7440-18-8D, Ruthenium, salts with polyethyleneimines and polypropyleneimines 7440-22-4D, Silver, salts with polyethyleneimines and polypropyleneimines 7440-23-5D, Sodium, salts with polyethyleneimines and polypropyleneimines 7440-46-2D, Cesium, salts with polyethyleneimines and polypropyleneimines 7440-50-8D, Copper, salts with polyethyleneimines and polypropyleneimines 7664-38-2D, Phosphoric acid, esters 7664-93-9D, Sulfuric acid, esters 7791-03-9, Lithium perchlorate 10043-35-3D, Boric acid (H3BO3), esters 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate

(polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

- IT 26375-28-0P, 2-Methyloxazoline homopolymer (starting material; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 16024-56-9P (synthesis and crosslinking of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 107-13-1DP, 2-Propenenitrile, reaction products with polyamines
1120-71-4DP, reaction products with polyamines (synthesis and crosslinking of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 9002-98-6P, Aziridine, homopolymer 26913-06-4P, Poly[imino(1,2-ethanediyl)] (synthesis and functionalization of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 38796-76-8P, Poly[(acetylimino)(1,2-ethanediyl)] (synthesis and in-situ hydrolysis of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 26338-45-4P (synthesis and reactions of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and

fuel cells)

L76 ANSWER 6 OF 6 HCA COPYRIGHT 2006 ACS on STN

129:122975 Salts of perfluorinated sulfonamides or sulfinamides and their use as ionic conductors and as catalysts. Armand, Michel; Choquette, Yves; Gauthier, Michel; Michot, Christophe (Centre National de la Recherche Scientifique (CNRS), Fr.; Hydro-Quebec). Eur. Pat. Appl. EP ~~850920~~ A2 19980701, 65 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (French). CODEN: EPXXDW. APPLICATION: EP 1997-403187 19971230. PRIORITY: CA 1996-2194127 19961230; CA 1997-2199231 19970305.

AB The salts comprise a cation and R1SOxN-Z in amts. to balance the pos. and neg. charges, where R1 is halo, perhaloalkyl (optionally interrupted by O, S, or NH) or -alkaryl, R2CF2, R2CF2CF2, R2CF2CF(CF3), or CF3CFR2; R2 is an org. radical which is not perhalogenated; Z is an electron-withdrawing group, which may be the residue of a polymer or may be a polyvalent group attached to other N-SOxR1 moieties; and x = 1 or 2. Thus, a mixt. of 40 mmol acrylonitrile and 60 mmol 4-CH2:CHC6H4SO2N-SO2CF3 Li+ was copolymd. in 82% yield by use of 1,1'-azobis(cyclohexanecarbonitrile) in THF, and the copolymer was used at 20% concn. as a binder in both the carbon anode and the carbon-LiNiO2 cathode of a **battery** contg. a gelled **electrolyte**.

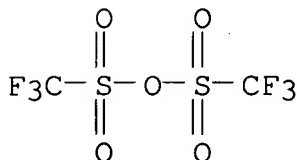
IT 358-23-6, Trifluoromethanesulfonic anhydride

1120-71-4, 1,3-Propane sultone 13036-75-4,
Fluorosulfonic anhydride

(salts of perfluorinated sulfonamides or sulfinamides for use as ionic conductors and as catalysts)

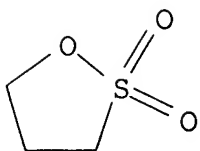
RN 358-23-6 HCA

CN Methanesulfonic acid, trifluoro-, anhydride (6CI, 7CI, 8CI, 9CI)
(CA INDEX NAME)

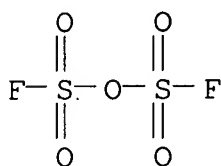


RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)

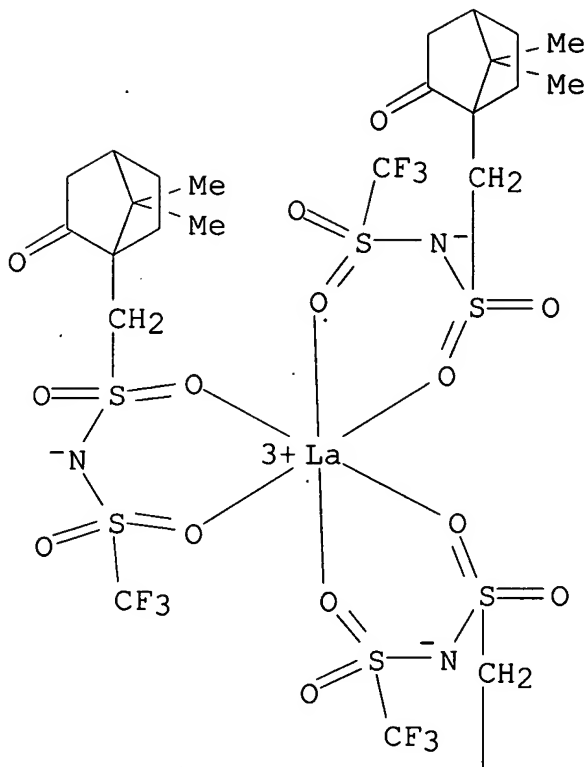


RN 13036-75-4 HCA
CN Disulfuryl fluoride (9CI) (CA INDEX NAME)

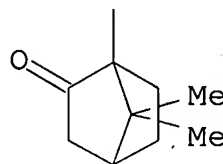


IT **210291-13-7P**
(salts of perfluorinated sulfonamides or sulfinamides for use as ionic conductors and as catalysts)
RN 210291-13-7 HCA
CN Lanthanum, tris[7,7-dimethyl-2-oxo-N-[(trifluoromethyl)sulfonyl- κ O]bicyclo[2.2.1]heptane-1-methanesulfonamidato- κ O]-
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- IC ICM C07C311-48
 ICS C07C311-09; C07D307-64; C07D303-34; C07D407-04; C07D207-452;
 C07D213-76; C07D285-135; C07D251-70; C07D219-10; C07D311-82
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): **52**, 67, 76
 IT Secondary **batteries**
 (polymeric salts of perfluorinated sulfonamides or sulfinamides
 for use in)
 IT 51-79-6, Ethyl carbamate 62-53-3, Benzenamine, reactions
 74-89-5, Methylamine, reactions 78-08-0, Vinyltriethoxysilane

92-82-0, Phenazine 95-54-5, o-Phenylenediamine, reactions
 96-24-2, 3-Chloro-1,2-propanediol 97-93-8, Triethylaluminum,
 reactions 98-16-8, 3-(Trifluoromethyl)aniline 98-61-3,
 4-Iodobenzenesulfonyl chloride 102-54-5, Ferrocene 111-92-2,
 Dibutylamine 142-84-7, Dipropylamine 143-15-7, Dodecyl bromide
 354-64-3, Pentafluoroethyl iodide **358-23-6**,
 Trifluoromethanesulfonic anhydride 375-72-4, Perfluorobutane-1-
 sulfonyl fluoride 392-95-0, 2-Chloro-3,5-dinitrobenzotrifluoride
 421-83-0, Trifluoromethanesulfonyl chloride 541-59-3, Maleimide
 581-28-2, 2-Aminoacridine 605-65-2, 5-(Dimethylamino)-1-
 naphthalenesulfonyl chloride 700-16-3, Pentafluoropyridine
 764-48-7, Ethylene glycol monovinyl ether 814-68-6, Acryloyl
 chloride 917-54-4, Methyllithium 920-66-1, 1,1,1,3,3,3-
 Hexafluoro-2-propanol 1070-89-9, Sodium bis(trimethylsilyl)amide
 1111-78-0, Ammonium carbamate **1120-71-4**, 1,3-Propane
 sultone 1120-99-6, 1,2,4-Triazin-3-amine 1126-79-0,
 Butoxybenzene 1622-32-8, 2-Chloroethanesulfonyl chloride
 1633-82-5, 3-Chloropropane-1-sulfonyl chloride 1648-99-3,
 2,2,2-Trifluoroethanesulfonyl chloride 2444-68-0,
 9-Vinylnanthracene 2495-39-8 2633-67-2, 4-Styrenesulfonyl
 chloride 3520-42-1, Sulforhodamine B 4286-55-9,
 6-Bromo-1-hexanol 4628-94-8, Dipotassium 1,3,4-thiadiazole-2,5-
 dithiolate 5130-24-5, Vinyl chloroformate 5231-87-8 6553-96-4,
 2,4,6-Triisopropylbenzenesulfonyl chloride 7673-09-8,
 Trichloromelamine 7795-95-1, 1-Octanesulfonyl chloride
 9036-19-5, Igepal CA 520 10444-89-0 10531-50-7,
 (R)-2,2,2-Trifluoro-1-phenylethanol **13036-75-4**,
 Fluorosulfonic anhydride 13360-57-1, Dimethylsulfamoyl chloride
 13781-67-4, 3-Thiopheneethanol 20611-81-8, Disodium cyanamide
 21797-13-7 25322-68-3 27835-99-0 40724-67-2 82985-35-1,
 Bis[3-(trimethoxysilyl)propyl]amine 210226-82-7 210227-12-6,
 3-(1,1,2,2-Tetrafluoroethoxy)benzenesulfonyl chloride 210227-69-3
 (salts of perfluorinated sulfonamides or sulfinamides for use as
 ionic conductors and as catalysts)

IT 23384-11-4P, N-[3-(Trifluoromethyl)phenyl]trifluoromethanesulfonamid
 e 35534-15-7P 51903-48-1P 152894-19-4P 210226-80-5P
 210226-90-7P 210226-92-9P 210226-94-1P 210226-95-2P
 210226-97-4P 210226-98-5P 210226-99-6P 210227-00-2P
 210227-01-3P 210227-02-4P 210227-04-6P 210227-08-0P
 210227-11-5P 210227-13-7P 210227-14-8P 210227-15-9P
 210227-19-3P 210227-21-7P 210227-26-2P 210227-27-3P
 210227-32-0P 210227-33-1P 210227-36-4P 210227-41-1P
 210227-42-2P 210227-44-4P 210227-45-5P 210227-49-9P
 210227-51-3P 210227-52-4P 210227-59-1P 210227-60-4P
 210227-64-8P 210227-65-9P 210227-66-0P 210227-67-1P
 210227-70-6P **210291-13-7P** 210291-15-9P 210304-78-2P
 (salts of perfluorinated sulfonamides or sulfinamides for use as
 ionic conductors and as catalysts)